In the Claims:

Claims 1-21 (canceled).

22. (new): A thermocouple comprising a sensing tip in electrical connection with a mineral insulated thermocouple cable characterized additional external shielding is provided by a low temperature sintering refractory material including particulate borosilicate and boric acid power.

23. (new): A thermocouple as claimed in claim 22 characterized in that the shielding is in the form of a sheath having inner and outer metal tubes constricted over a filler of low temperature sintering refractory material.

24. (new): A thermocouple as claimed in claim 23 in which the outer tube is mechanically constricted to compact the filler.

25. (new): A thermocouple as claimed in claim 24 in which the constriction is effected by drawing, swaging or rolling.

26. (new): A thermocouple as claimed in claim 22 in which the particulate borosilicate comprises between 6% and 10% by weight of the refractory material.

27. (new): A thermocouple as claimed in claim 26 in which the boric acid powder comprises about 3% to 5% weight of the refractory material.

28. (new): A thermocouple as claimed in claim 27 in which the boric acid powder content of the refractory material is about one half of the particulate borosilicate content.

29. (new): A thermocouple as claimed in claim 23 in which the tubes of the sheath are stainless steel.

30. (new): A thermocouple as claimed in claim 23 in which the refractory material is pre-dried at a temperature of between 135°and 150°C.

31. (new): A thermocouple as claimed in claim 30 in which the refractory material is at least partially sintered before the thermocouple is used.

32. (new): A thermocouple as claimed in claim 31 in which the refractory material is beaded before being formed into the sheath.

33. (new): A thermocouple comprising a sensing tip in electrical connection with a mineral insulated thermocouple cable characterized additional external shielding is provided by a low temperature sintering refractory material including particulate borosilicate and boric acid power, in which the tip is formed from a thermocouple cable with a negative metal tube housing a positive wire embedded in the low temperature sintering material.

34. (new): A thermocouple as claimed in claim 32 in which the tip is formed by providing a hot junction from the wires of the thermocouple cable and supported by the sheath with both tubes and the refractory material formed to cap the hot junction.

35. (new): A thermocouple as claimed in claim 34 in which the outer tube of the sheath is annealed after being constricted and the refractory material at least partially sintered during annealing process.

36. (new): A method of shielding a thermocouple comprising the steps of locating beads of suitably bound refractory material between an inner metal tube and an outer metal tube and reducing the sheath down to a predetermined size by drawing swaging or rolling during which process the beaded refractory material is compacted between the inner tube and the outer tube.

37. (new): A thermocouple as claimed in claim 26 in which the boric acid powder content of the refractory material is about one half of the particulate borosilicate content.

38. (new): A thermocouple as claimed in claim 22 in which the tubes of the sheath are stainless steel.

39. (new): A thermocouple as claimed in claim 22 in which the refractory material is pre-dried at a temperature of between 135°and 150°C.

40. (new): A thermocouple as claimed in claim 22 in which the refractory material is beaded before being formed into the sheath.

41. (new): A thermocouple as claimed in claim 23 in which the tip is formed by providing a hot junction from the wires of the thermocouple cable and supported by the sheath with both tubes and the refractory material formed to cap the hot junction.

42. (new): A thermocouple as claimed in claim 23 in which the outer tube of the sheath is annealed after being constricted and the refractory material at least partially sintered during annealing process.